DOCUMENT RESUME

ED 481 338 CE 085 548

AUTHOR	Bach, Hans-Uwe; Koch, Susanne
TITLE	Working Time and the Volume of Work in Germany: The IAB Concept of Measurement. IAB Labour Market Research Topics.
INSTITUTION	Institute of Employment Research, Nurenberg (Germany).
REPORT NO	No-53
ISSN	ISSN-0945-8093
PUB DATE	2003-00-00
NOTE	28p.
AVAILABLE FROM	IAB, Regensburger Strasse 104, 90327, Nurenberg, Germany (Annual price: 15 Euros; free to foreign subscribers). For full text: http://doku.iab.de/ topics/2003/topics53.pdf.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Adult Education; Adults; Economic Factors; Efficiency; Employer Employee Relationship; Employment; *Employment Patterns; Flexible Working Hours; Foreign Countries; Human Capital; Labor Needs; *Labor Utilization; *Measurement Techniques; National Norms; Organizational Effectiveness; *Productivity; Trend Analysis; Work Environment; *Worker Days; Working Hours
IDENTIFIERS	*Germany

ABSTRACT

The Institut fuer Arbeitsmarkt- und Berufsforschung (IAB) or Institute for Employment Research has developed a detailed working time and volume of work measurement concept in order to more comprehensively assess the demand for labor. The individual components of working time in Germany are obtained from various data sources and combined to form the paid volume of work. The IAB's measurement concept of working time is a quarterly calculation; calculation depth is based on six economic sectors further broken down for calculation of specific components. The basis for determining average actual working time and volume of work is the number of wage and salary earners, self-employed people, and unpaid family workers. The point of departure for determining working time of wage and salary earners is the number of potential working days. Collectively agreed or customary working time is the most influential component in the working time calculation, independent of the economic situation. Other components are sick leave; paid overtime; short-time work; working time accounts; bad weather, strikes, and accepted part-time work; secondary employment; and components to increase flexibility. Results of the volume of work calculation 1991-2001 show the average working time of full-time employees in western Germany was 1,630 hours in 2001, about the same as in the early 1990s; in eastern Germany, the working time was 1,683 hours; overall aggregated volume of work in Germany was 47.7 billion hours in 2001, 7 percent less than in 1991. (YLB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 481 338

IAB topics

IAB Labour Market Research Topics

Institut für Arbeitsmarkt- und Berufsforschung der Bundesanstalt für Arbeit
Institute for Employment Research of the Federal Employment Services, Germany

No. 53, 2003

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Hans-Uwe Bach, Susanne Koch

Working Time and the Volume of Work in Germany

- The IAB Concept of Measurement -

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

T. Rhein

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

BEST COPY AVAILABLE

Bundesanstalt für Arbeit
Federal Employment Services

Publisher of the series:
Institut für Arbeitsmarkt- und Berufsforschung der Bundesanstalt für Arbeit (IAB),
Regensburger Strasse 104, 90478 Nürnberg/Germany
Telephone: +49-911-179-0
Telefax: +49-911-179-3258

Coordinators:
IAB Topics Working Group: Werner Dostal, Knut Emmerich, Barbara Koller, Ute Leber, Gerd Peters, Hannelore Plicht, Thomas Rhein, Heinz Werner

Distribution:
To order apply to the IAB, Regensburger Strasse 104, 90478 Nürnberg

Annual price:
15,- € (for German subscribers); foreign subscribers are currently supplied free of charge

Copyright:
No part of this publication may be reproduced in any form without prior written permission of the IAB and in all reproductions full reference of the details must be given.

The series "IAB Labour Market Research Topics" is designed for the publication of selected papers resulting from the work done by the IAB or by studies commissioned by the IAB. Papers bearing the author's name do not necessarily represent the opinion of the IAB or the Bundesanstalt für Arbeit.

ISSN 0945-8093

Visit our website at http://www.iab.de
with English language section including
full text versions of IAB Topics (PDF file format)

The IAB is the research division of the German Bundesanstalt für Arbeit where scientists of different economic and social science disciplines work. The range of research topics can be characterized briefly as follows:
- observation of and forecasts for the German labour market
- labour market statistics
- labour market theory and policy
- evaluation of employment programmes
- regional and international labour markets
- occupation sociology
- research in skills and qualifications
- technological development and the labour market
- business and personnel management

Hans-Uwe Bach, Susanne Koch

Working Time and the Volume of Work in Germany
- The IAB Concept of Measurement -

1 The importance of researching and empirically recording working time

2 The working time and volume of work measurement concept of the IAB

3 People as components

4 Working time of wage and salary earners

5 Working time of the self-employed and unpaid family workers

6 Employment, working time, and volume of work 1991 - 2001

7 Conclusion and Outlook

8 References

4

1. The importance of researching and empirically recording working time

Working time has increasingly been at the forefront of international political discussion and empirical research into the labour market and economics over the past few years. First, there has been greater realisation that merely considering the number of gainfully employed persons is not sufficient for a comprehensive analysis of the trend for the demand for labour. For example, the number of gainfully employed persons in Germany rose 1 % between 1991 and 2001. During the same period, the average time worked by each gainfully employed person decreased 6 %, resulting in a 5 % decline in the volume of work. That clearly shows that it is only by including the trend for working time that the overall aggregate (and naturally also sectoral and regional) demand for labour can be comprehensively treated and analysed.

Moreover, the emphasis in the political discussion has shifted away from issues related to working time. More leisure time, health aspects, and better quality of life in general previously formed the background to collective bargaining, but shorter, more flexible working time as a way to combat unemployment has occupied centre stage in the debate on labour market policies for years now. Increased efforts are being devoted to granting individual requests concerning working time and taking into account the relationships between working time and company operating hours, as well as utilisation of equipment. Greater flexibility for working time has increasingly shown that employee and employer interests related to the issue of working time need not necessarily be contradictory.

The result is a complex of issues requiring statistical corroboration. However, statistical recording of actual working times was initially far from satisfactory. Only statistical fragments of varying quality and definition were available. That is also one of the reasons why analytical treatment of the diverse issues related to working time and the volume of work through empirical research for a long time did not meet requirements and why shortcomings persist.

A sufficiently disaggregated calculation of working time and its components is the only basis for analysing the demand for labour and evaluating the various approaches to poli-

cies on working time and their effects. The overall aggregate effects on employment of reducing or redistributing working time or making it more flexible can be determined only in conjunction with an analysis of the trend for numbers of gainfully employed people, volume of work, real gross domestic product, and hourly productivity.

Statistical recording of working time is also becoming more important in the international context. For several years, statistical offices throughout the EU have been required to show working time, volume of work, and the variables derived from them (labour productivity per hour of gainful employment, wage costs per hour worked by an employee, and earnings per hour worked by an employee) as part of the System of National Accounts. Detailed data on working time is also used at the OECD and the United States Bureau of Labor Statistics.

For those reasons, the IAB has developed a detailed working time and volume of work measurement concept, whose broad outlines are presented below. That is followed by an example of the trend over the past ten years showing how important it is to record working time in order to obtain a complete picture of the demand for labour.

2. The working time and volume of work measurement concept of the IAB

The IAB has been working within the framework of an (ongoing) research project since 1969 to prepare comprehensive working time and volume of work calculations.[1] The individual components of working time in Germany are obtained from various data sources and combined to form the *paid* volume of work in Germany.

The IAB's measurement concept of working time is a *quarterly calculation*. It is done on a "bottom-up" basis for *specific economic branches*. The calculation depth is based on six economic sectors (known as the A6 breakdown according to the WZ 93 classification of economic branches): agriculture, forestry and fishing; the manufacturing sector not including construction; construction; trade, hospitality and transportation; finance, leasing and corporate services; and public and private services).

[1] A fundamental presentation of this effort is contained in Reyher/Kohler (1988)

However, they must be broken down further for calculation of specific components (in reference to economic branches as well as occupational status and sex). Conversion to the new system of economic branches is also required in many cases (even the frequently-used Microcensus before 1995). In addition, sufficiently reliable results by economic sector are not available for all components of working time.

The calculations also continue to be *divided into western and eastern Germany.* This is necessary for reasons of substance. Moreover, there is no alternative given the current data situation (for example in the case of collectively-agreed or industry customary working times). The division of the calculations into working times of wage and salary earners, the self-employed persons, and unpaid family workers has been retained, although there is currently no consistent separate calculation for *men and women* and no consistent breakdown of employees into *hourly workers and salaried employees.* However, there are plans to resume the breakdown by sex in the form of a "subsystem".

The IAB's volume of work measurement concept has been amended several times over the years due to changes in issues related to labour market policies, conceptual developments, and improvements in the statistical data situation. The volume of work measurement concept was integrated into the National Accounts of the German Federal Statistical Office and thereby into the European System of National Accounts in 1997.

When the German National Accounts were revised in 1999 – particularly as a result of the new calculation of numbers of gainfully employed persons with particular attention to recording the number of marginal part-time workers – the IAB's working time measurement concept also had to be revised (initially for the years as from 1991). Amendments of various components of working time which had been planned for a long time but had been set aside for continuity reasons in the long time series after 1960 were carried out.

The current version of the volume of work measurement concept includes calculation of all components broken down into full-time and part-time employees. This approach allows the development for working time and volume of work for the corresponding groups to be shown separately.

3. People as components

The basis for determining the average actual working time and volume of work is the number of wage and salary earners, self-employed people, and unpaid family workers. The quarterly values for these are taken from the National Accounts of the German Federal Statistical Office. Part-time employees are determined by adding part-time employees subject to social security contributions (not including marginal part-time workers), part-time civil servants, and the estimated number of marginal part-time workers. The number of full-time employees is then calculated from the difference between all wage and salary earners and part-time employees. The breakdown into western and eastern Germany is mainly based on the Microcensus and the file of employees subject to social security contributions.

For correct determination of working time, it is still of interest to indicate people who according to the statistics are gainfully employed but whose working time is zero. These are primarily people on parental leave and those under the special scheme of partial retirement for older workers (release phase). Therefore, they are shown separately in the working time calculation.

Subtracting the above groups of people, who do not contribute to overall aggregate output, avoids overestimates of the macroeconomic volume of work.

4. Working time of wage and salary earners

4.1 Potential working days

The point of departure for determining the working time of wage and salary earners is the number of potential working days. A five-day week is fundamentally used for this, and it is assumed that employees are given compensatory time off on other days when they work on Saturdays, Sundays, or holidays that do not fall on the weekend. Therefore, the number of potential working days results from the number of calendar days minus Saturdays, Sundays, and holidays. When certain holidays are not taken throughout Germany, they are weighted with the number of employees subject to the social security contributions at the *"Laender"* level to determine averages (west and east separately).

4.2 Collective agreement components

Among the components in the working time calculation that are *independent* of the economic situation, the *collectively-agreed or customary working time* is the most influential. It is the best reflection of the long-term trend for working time. It is sufficiently confirmed by statistics from the German National Statistical Office, particularly for the industry incl. energy. There are gaps in coverage of the primary and tertiary sectors of the economy. Information from the collective agreement archives of the WSI[2] is used for those sectors.

Basic information on "collectively-agreed" working time for *part-time employees* is obtained from the Microcensus. That source can be used to calculate the ratio of the average number of hours worked by part-time employees (as well as the work done by marginal part-time employees as a sub-category thereof) to the average number of hours worked by full-time employees. The results are applied to the collectively-agreed or customary (full-time) weekly hours.

The source for calculation of the collectively-agreed *annual holiday leave* is the collective agreement archive of WSI. The information on basic leave and actual total leave are weighted at a ratio of 30:70. The division by quarter uses the German National Statistical Office's statistics on "guest-nights by nationals in places of accommodation". Additional days off (e.g. one day in public service) and times of maternity leave [Mutterschutzzeiten] are covered separately.

The number of *special effects* on holiday leave or lost work time similar to holiday leave, such as additional leave for heavy or hazardous work, school holidays for teachers, and additional leave for the severely handicapped, are not yet taken into account. Rough calculations of this indicate an average of about one day (in western Germany) to a half-day (in eastern Germany) per year for all employees.

[2] WSI - Wirtschafts- und Sozialwissenschaftliches Institut (Institute of Economic and Social Research), Cologne

4.3 Sick leave

The benchmark figures for the calculation are the monthly sick leave data (in percent) for compulsory members of the state health insurance scheme with continued payment of wages for at least six weeks (German Federal Ministry of Health). The trend for times of incapacity for work lasting up to three days, which are under-recorded in this series, is most likely offset by the non-compulsory insured persons (salaried employees not covered by the agreed pay scale, civil servants, and marginal part-time workers) with lower levels of lost work time. Cases in which people resume work while still certified unfit for work by a physician also have a similar effect.

Because these statistics are not broken down by economic branch, a special survey of the Microcensus which is conducted at multi-year intervals (such as 1989, 1995) is used as a supplemental source. It indicates relative differences in sick leave data for different economic branches.

A more detailed analysis shows that lost work time as a result of sickness is strongly influenced by personal characteristics, which means that it depends in macroeconomic terms on the composition of the labour pool. However, it can be seen over the course of time that the sick leave rate also correlates with the overall aggregate development, particularly the unemployment level.

4.4 Paid overtime

Paid overtime[3], as well as the components of short-time work and the effects of working time accounts (transitional overtime) described in the sections below, help enterprises to absorb short- or medium-term fluctuations in demand that can occur seasonally or as a result of the economic situation. Paid overtime is a subject for political discussion primarily because eliminating a portion of such overtime could promote employment. Therefore, it is particularly important to show the level of paid overtime (and any changes in it) as accurately as possible. This component of working time is not statistically documented as well as it might be, but combining the various sources does allow

[3] Because the volume of labour calculation is intended to show only the *paid* volume of labour, it does not contain unpaid overtime.

an analysis of the development for overtime.[4] Sources for determining paid overtime include information from the German Federal Statistical Office based on quarterly earnings surveys (only the industry) and business surveys by the IAB (covering all economic branches).

The quarterly earnings surveys for the industry include only workers in enterprises with 20 or more employees. However, we assume that this data can be considered solid subject to the limitations below:

- Surveys on salary and wage structures conducted at multi-year intervals show that overtime by workers is *under-recorded* in the quarterly survey.
- Workers in small enterprises, who may tend to work more paid overtime than in large enterprises, are not included.
- According to the major surveys, *salaried employees* do less overtime than workers.

The results of the *business* surveys cover all areas of the economy. Because it is likely that some unpaid overtime is also included due to the survey design, the results of the business surveys for all economic branches are reduced by a factor based on the difference between conclusions of the earnings surveys by the German Federal Statistical Office and the business surveys for the *manufacturing sector*.

Finally, the volume of overtime also reflects the fact that *marginal part-time workers, trainees, people on childcare leave, and people in the release phase of partial retirement for older workers* do not work overtime.

A regression analysis shows[5] that the paid overtime obtained in this way is very much influenced by seasonal and economic fluctuations but that it also in some cases offsets calendar-related fluctuations in working days. Also, long-term downward trend for per-capita overtime can be seen, at least in western Germany, particularly as a result of the increase in other instruments to make working time more flexible, such as transitional

[4] The basis for estimating the volume of overtime and problems encountered are described in Karr/Spitznagel (1999).
[5] Cf. Authors' Collective (2002).

overtime. However, the regression analysis also shows that the majority of paid overtime is not due to the operational need for short-term flexibility. After a more precise analysis[6] of the "core", this might be a possible starting point for a reduction in overtime that could affect employment levels.

4.5 Short-time work

The mirror image of the paid overtime that allows an upward adjustment of working time is the use of short-time work to temporarily reduce the actual time worked. The data on short-time work collected by the BA is included in the working time calculation. The average lost work time per short-time worker is then calculated from the statistically documented groups of lost work time.

The analysis of the trend for lost work time as a result of short-time work shows that it has experienced a sharp downward trend over the last ten years, in some cases due to changes in legislation (making the instrument more expensive for employers). However, the increased popularity of flexible working times, for example in the form of working time corridors in company agreements to make employment more secure, have also contributed to the decline of this traditional instrument for making working time more flexible.

4.6 Working time accounts

Given their increased importance in the future, the aforementioned "modern" instruments for making working time more flexible must also be included in calculations of working time. This is done under the collective term "working time account effects" which covers the various ways of working more or less than the regular working time using compensatory time off. However, while paid overtime can be determined relatively well using data from various sources (see section 4.4), there are barely any empirical surveys that can be used to analyse transitory overtime or the build-up and reduction of working time accounts.

An attempt is therefore being made to use the available data to make the soundest possible estimates of this type of overtime. It must be suspected that much the same variables

[6] A discussion of such analyses is contained in Author's Collective (1998).

influence changes in transitory overtime as those affecting changes in the number of paid overtime hours (economic situation, seasonal effects, and the working day effect).

The surveys on working time by the ISO Institute[7] can be used to explore the proportional relationship between paid and transitory overtime. That data shows how the ratio of weekly paid overtime to transitory overtime has changed.

This allows the build-up or reduction of the balances in working time accounts to be estimated over time. The exact estimating procedure is described in Koch (2001). Differences in the distribution of working time accounts in the individual economic branches are offset by introducing a corrective factor that is also based on an ISO survey.

4.7 Bad weather, strikes, and accepted part-time work

In addition to the "major" components of working time, the working time calculation also includes some whose quantitative effect may be slight, at least at the macroeconomic level, but which are still necessary to obtain a complete picture of macroeconomic working time.

This includes lost work time as a result of bad weather, which – like short-time work as a result of changed legislation – has become less important over time. The *number of lost hours and the affected employees* are recorded (to the extent that BA pays benefits). The total lost work due to bad weather is calculated from that subpopulation.

The *"lost working day"* data collected by the BA provides sufficiently deep economic and temporal breakdowns for the "strikes and lock-outs" component of working time and can be directly converted into volumes using the collectively-agreed or customary working times.

We understand "*accepted part-time work*" to be a form of part-time work that is agreed collectively or at the enterprise level to protect employment levels. Generally speaking, such agreements state that the working time and compensation of employees in the affected enterprises will be reduced for a specific time period, for example to 80% of the

[7] Cf. Bundesmann-Jansen, Gross, Munz (2000).

full-time level. In return, the agreements contain employment guarantees for the stipulated time period.

The available data on this component of working time is extremely unsatisfactory. Therefore, both the number of employees affected and the reduction in their work time must be estimated using individual information that in some cases is based on surveys of enterprises and experts' knowledge.

4.8 Secondary employment

The sections above refer to the time worked by employees at their main (or only) jobs. To that must be added *the volume of work from multiple employment*. The source used is the Microcensus, which includes information on both the number of employees with second jobs and the average number of hours worked at such jobs. We consider people with second jobs in agriculture to be part-time farmers and combine the volume of work from their secondary employment with that of exclusively self-employed persons and unpaid family workers.

4.9 Components to increase flexibility

There are often differences in the potential number of working days depending on where movable holidays fall. The deviations from the average number of working days over many years are compensated to some extent by adjustments to overtime and working time accounts. However, it must be assumed that a portion of the effects on working time are not covered by this (such as shorter breaks when there are fewer potential working days and actual but unobserved flexibility in working time). Therefore, "working day elasticities" for specific economic branches are calculated to approximate this effect. For the most part they correspond to the production elasticities (determined by the German Bundesbank). This approach also takes into account, for example, the fact that movable holidays most likely have much less effect on time worked in agriculture than on time worked in the industry.

5. Working time of the self-employed and unpaid family workers

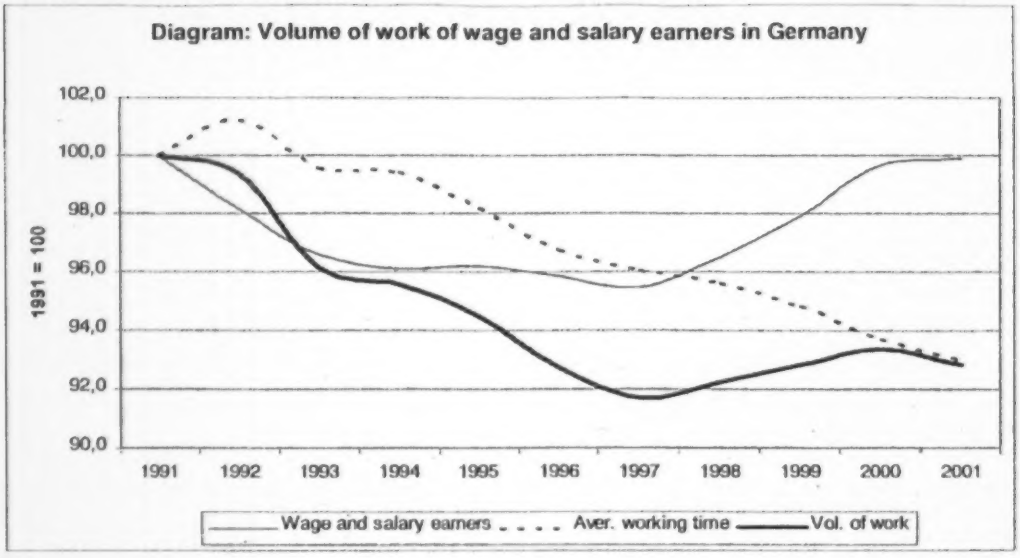
In addition to the time worked by wage and salary earners, the aggregated calculation of working time must also reflect the working time of the self-employed persons and unpaid family workers. The days (normally) worked by this group every calendar week are taken from the *Microcensus*. It is assumed that the information for the survey week applies to every week of the year.

The hours (normally) worked each week by self-employed persons and unpaid family workers are also shown in the Microcensus. Here, too, the data for the survey week are applied to the entire year. One exception: in the agriculture and forestry sector, lower working times are used for the first and fourth quarters.

For holiday leave, the *holiday leave for employees* (not including special leave and the like) of each specific industry is assumed. Based on the results of the Microcensus, *half the sick leave rate for employees is used.* The volume of work of part-time farmers in their second job is included under that of the self-employed.

6. Employment, working time, and volume of work 1991 – 2001

The results of the volume of work calculation as from 1991 are described briefly below, with an emphasis on the dominant development for wage and salary earners. The different development for employment markets in western and eastern Germany require a separate presentation. The complete working time calculation is shown in Table 1.



6.1 Employment

In *western Germany*, the total number of *wage and salary earners* in 2001 was at least 1.2 million or 4 % over the level for 1991. This was the result of lasting contradictory trends for full-time and part-time employment: while the number of part-time employees rose continuously over the entire period (by 2.9 million or 61 %), the number of full-time employees declined sharply from 1992 through 1998 (by over 2 million). The number of full-time employees increased (300,000) in 1999 and 2000, followed by a slight decline in 2001. The part-time rate rose by more than 17 % to just under 27 % in 2001.

Ignoring the distortions of the early 1990s as a result of reunification, the changes in the structure of gainfully employed persons in *eastern Germany* show a pattern similar to the west, although with a different point of departure. The number of part-time employees has more than doubled since 1991, reaching almost 1.2 million people by 2001, and the part-time rate rose from 6 % in 1991 to more than 20 % in 2001. However, it is still far below the level for western Germany. The greater increase compared with the west is also due to the large number of employment creation measures in eastern Germany (known by their German acronym ABM), which were implemented by shortening working times.

BEST COPY AVAILABLE

Overall, 8.9 million people were part-time employees in Germany in 2001, and the part-time rate was nearly 26 %.

6.2 Working time

The average working time of full-time employees in western Germany was 1,630 hours in 2001, about the same as in the early 1990s. The trend toward shorter collectively-agreed or customary working times as a result of lower weekly working hours and/or more days of holiday leave did not continue into the 1990s. In contrast, the time worked by part-time employees declined 7.5 % to 618 hours, primarily due to the sharp increase in marginal part-time work. Consequently, the percentage of annual working hours worked by part-time employees compared with the hours worked by full-time employees declined from 41 % to 38 %. Overall, the average working time of all employees dropped from 1,467 hours in 1991 to 1,347 hours in 2001 (-120 hours or 8 %). The part-time effect (in this case the difference between the time worked by full-time employees and the time worked by full- and part-time employees) rose during that period from about 175 to 280 hours. The decline in average annual working time during the 1990s was therefore not the result of across-the-board reductions in working time, but rather primarily due to structural changes in gainful employment.

The development for the average working time in *eastern Germany* was influenced by adjustment processes through the mid-1990s – collectively-agreed alignment of weekly hours and holiday leave with western levels, elimination of short-time work due to structural and economic factors, and gradual proliferation of (paid) overtime. A similar pattern occurred in western German in the late 1990s. The working time of full-time employees barely changed any further over time, because the collectively-agreed alignment with western conditions lessened. At 1,683 hours in 2001, it was only 3 % over the level in the west. Because there was less marginal part-time work than in western Germany, the average weekly working time of part-time employees in the east was 755 hours, 22 % higher than in the west. The part-time effect at approximately -200 hours in 2001 was about the same as western levels in the mid-1990s.

Due to western Germany's large share of gainful employment, the average working times for full-time and part-time employees in *Germany as a whole* for the most part follows the trend in the west.

6.3 Volume of work

The *volume of work* by employees in *western Germany* declined 7 % from 1991 through 1997, after which it rose 3 % to 39.3 billion hours in 2001. The full-time volume rose 9 %, while the part-time volume rose 50 % and in 2001, at 5.0 billion hours, made up just 13 % of the total volume of work by employees. It accounted for only 8 % in 1991.

The volume of work by employees in *eastern Germany* declined 19 % from 1991 through 2001 to 8.4 billion hours per year. The percentage of the volume of part-time labour out of the total volume of work in eastern Germany more than doubled during the 1990s, reaching 11 % in 2001 (west: 13 %). The lower part-time rates compared with western Germany and the longer times worked by part-time employees partially offset each other.

The overall aggregated volume of work by employees in *Germany* was 47.7 billion hours in 2001, 7 % less than in 1991. This resulted from a 12 % decline in the volume of full-time labour during that period and a 60 % increase in the part-time volume. The approximately 26 % of part-time employees contributed a good 12 % of the total volume of work in 2001.

7. Conclusion and outlook

The IAB's working time and volume of work measurement concept provides a comprehensive, detailed image of the actual time worked by the various groups of gainfully employed people and its components. This offers the basis for detailed theoretical and empirical analyses of both the overall trend for working time and individual components, such as part-time work, paid overtime, and working time accounts.

The results of the working time calculation are also important for analyses and projections of the aggregate development, because the number of gainfully employed persons provides only an insufficient reflection of the development for the demand for labour, as shown by the results presented in section 6. Therefore, working time and the volume of work are also contained in the annual short-term projection table of the IAB. The results of the working time calculation are also included in the macroeconometric short-term projection model that is prepared by the IAB in conjunction with the RWI, the Rhine-Westphalia Institute for Economic Research.

The IAB's working time calculation is currently available from 1991 up to the present. To further refine the image and to increase analytical capabilities, the calculation is being expanded in the following directions:

- Retroactive calculation for western Germany to 1970 in the breakdown by six economic sectors
- Expansion of the breakdown into 31 economic branches starting in 2002
- Sex- and age-group-specific division of the breakdown according to six economic areas

This expansion is also important because the analysis of working time and volume of work is becoming increasingly important in the international context (EU in the framework of the European System of National Accounts, OECD, and Bureau of Labor Statistics).

Table I: Average working time and its components in Germany

		1991 Year	1992 Year	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year	1999 Year	2000 Year	2001 Year
A. Wage and salary earners												
Persons												
Wage/salary earners	1,000	34,874	34,236	33,676	33,516	33,550	33,431	33,294	33,642	34,138	34,751	34,836
Full-time	"	29,451	28,504	27,727	27,262	26,914	26,406	25,794	25,614	25,654	25,696	25,468
Part-time	"	5,215	5,448	5,667	5,965	6,261	6,651	7,060	7,582	8,038	8,608	8,915
Persons on parental leave	"	208	284	282	289	375	373	440	442	436	423	412
Partial retirem. (release period)	"	0	0	0	0	0	0	0	4	10	24	41
Part-time rate (excl. parent. leave + partial retirement)	%	15.0	15.9	16.8	17.8	18.7	19.9	21.2	22.5	23.5	24.8	25.6
Full-time equivalent	1,000	31,635	30,787	30,113	29,774	29,516	29,084	28,568	28,561	28,755	29,008	28,931
Potential working days												
Calendar days	Days	365	366	365	365	365	366	365	365	365	366	365
Saturdays/Sundays	"	104	104	104	105	105	104	104	104	104	106	104
Public holidays	"	12.9	10.3	9.0	9.2	10.3	12.0	11.6	9.3	8.0	10.3	12.0
Potential working days	Days	248.1	251.7	252.0	250.8	249.7	250.0	249.4	251.7	253.0	249.7	249.0
Collectively agreed/customary working time												
Weekly working time Full-time	hrs	38.84	38.56	38.32	38.17	38.04	37.88	37.85	37.83	37.80	37.79	37.77
Part-time	"	15.57	15.32	15.38	15.41	15.02	14.56	14.13	14.05	13.97	13.98	14.12
Part-time as % of full-time	%	40.1	39.7	40.1	40.4	39.5	38.4	37.3	37.1	37.0	37.0	37.4
Weekly working t.(all wage/salary earners)	hrs	35.22	34.67	34.27	33.93	33.49	32.98	32.51	32.15	31.88	31.59	31.41
Coll. Agreed/customary vol. of work	mn hrs	60,949	59,746	58,175	57,033	56,109	55,134	53,992	54,447	55,074	54,810	54,492
Coll. Agreed/customary working t.	hrs	1,747.7	1,745.1	1,727.5	1,701.7	1,672.4	1,649.2	1,621.7	1,618.4	1,613.3	1,577.2	1,564.2
Changes against previous year	%		- 0.1	- 1.0	- 1.5	- 1.7	- 1.4	- 1.7	- 0.2	- 0.3	- 2.2	- 0.8

BEST COPY AVAILABLE

Holidays												
Holidays + other release times	Days	30.6	30.9	31.4	31.4	31.4	31.3	31.3	31.3	31.3	31.3	31.2
of these coll. agreed regular holidays	"	28.7	29.0	29.4	29.5	29.7	29.7	29.7	29.7	29.7	29.7	29.7
Holiday volume	mn hrs	7,516	7,336	7,238	7,144	7,056	6,910	6,778	6,776	6,814	6,865	6,839
Working days adjusted by holidays	Days	217.5	220.8	220.7	219.4	218.3	218.7	218.1	220.3	221.7	218.4	217.7
Working time adjusted by holidays	hrs	1,532.2	1,530.8	1,512.5	1,488.5	1,462.1	1,442.5	1,418.1	1,417.0	1,413.6	1,379.7	1,367.9
Sick leave												
Sick leave by persons	%	5.14	4.97	4.80	4.82	5.11	4.67	4.14	4.07	4.21	4.19	4.15
Sick leave in working days	Days	11.2	11.0	10.6	10.6	11.2	10.2	9.0	9.0	9.3	9.2	9.0
Sick leave in working hours	hrs	78.7	76.0	72.6	71.7	74.7	67.4	58.8	57.7	59.5	57.8	56.7
Volume lost by sick leave	mn hrs	2,746	2,603	2,444	2,404	2,507	2,253	1,956	1,941	2,031	2,009	1,976
Working time adj. by sick leave	hrs	1,453.4	1,454.8	1,440.0	1,416.8	1,387.4	1,375.1	1,359.3	1,359.3	1,354.1	1,321.9	1,311.2
Effective working days												
Working days w.o. holidays a. sick leave	Days	206.3	209.8	210.1	208.8	207.1	208.5	209.1	211.4	212.4	209.2	208.7
Paid overtime												
Overtime per calendar week 1)	hrs	1.19	1.18	1.12	1.21	1.23	1.09	1.07	1.09	1.09	1.10	1.13
Overtime per period 1)	"	61.8	61.6	58.5	63.3	64.3	57.1	56.0	56.7	56.7	57.6	59.0
Overtime per period 2)	"	54.6	54.2	51.2	55.2	55.8	49.1	47.5	47.5	47.1	47.5	48.4
Volume of overtime	mn hrs	1,904	1,855	1,725	1,850	1,873	1,640	1,580	1,598	1,607	1,649	1,688
Working time incl. overtime 2)	hrs	1,508.0	1,509.0	1,491.2	1,472.0	1,443.2	1,424.2	1,406.8	1,406.8	1,401.2	1,369.3	1,359.7
Short-time work												
Short-time workers	1,000	1,761	653	948	372	199	277	183	115	119	86	123
Work lost per short-t. worker	%	61.4	48.0	34.7	38.9	47.8	44.1	47.2	49.4	44.8	57.7	51.3
Work lost per short-t. worker	hrs	940.2	735.1	525.2	579.7	699.3	636.0	669.5	699.7	633.3	796.5	702.1
Volume of work lost	mn hrs	1,656	480	498	216	139	176	122	81	75	69	86
Short-time work effect	hrs	47.5	14.0	14.8	6.4	4.1	5.3	3.7	2.4	2.2	2.0	2.5

21 BEST COPY AVAILABLE

Other working t. lost												
Bad weather effect	hrs	3.0	2.4	3.8	2.0	2.7	2.6	1.6	1.2	1.7	1.2	1.2
Industr. action effect	"	0.0	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Effect of accepted part-time work	"	0.0	0.0	0.0	1.8	0.8	1.2	1.2	1.0	1.0	1.0	1.0
Effect of working time accounts												
Changes in balance	hrs	+ 2.1	+ 1.0	- 2.0	+ 1.3	+ 0.5	- 0.9	+ 0.2	+ 0.7	+ 0.7	+ 2.5	- 1.0
Adjustm. for differences in the calendar												
Effect	hrs	+ 7.8	- 7.6	- 9.2	- 3.7	+ 5.0	+ 3.7	+ 6.2	- 3.1	- 8.6	+ 4.9	+ 7.7
Secondary work												
No. of incidents	1,000	497	451	489	461	592	722	750	837	796	734	736
Working time in secondary work	hrs	391.8	396.5	361.2	384.5	329.4	328.0	352.4	344.5	372.6	375.3	361.4
	mn											
Volume of work	hrs	195	179	177	177	195	237	264	288	297	275	266
Effect of secondary work	hrs	5.6	5.2	5.2	5.3	5.8	7.1	7.9	8.6	8.7	7.9	7.6
Effective working time												
Working time	hrs	1,473.1	1,490.8	1,466.5	1,464.6	1,446.8	1,425.1	1,414.7	1,408.3	1,397.1	1,380.5	1,369.3
Changes against prev. year	%		+ 1.2	- 1.6	- 0.1	- 1.2	- 1.5	- 0.7	- 0.5	- 0.8	- 1.2	- 0.8
Working time full-time	hrs	1,617.5	1,653.5	1,635.0	1,643.6	1,638.4	1,629.5	1,639.0	1,648.3	1,647.9	1,643.9	1,639.0
Changes against prev. year	%		+ 2.2	- 1.1	+ 0.5	- 0.3	- 0.5	+ 0.6	+ 0.6	- 0.0	- 0.2	- 0.3
Working time part-time	hrs	688.6	682.2	681.3	684.5	669.9	656.7	643.4	642.8	638.7	633.1	636.0
Changes against prev. year	%		- 0.9	- 0.1	+ 0.5	- 2.1	- 2.0	- 2.0	- 0.1	- 0.6	- 0.9	+ 0.5
For information: effect of working days	%		+ 1.4	+ 0.1	- 0.5	- 0.4	+ 0.1	- 0.2	+ 0.9	+ 0.5	- 1.3	- 0.3
Daily working time	"		- 0.2	- 1.8	+ 0.4	- 0.8	- 1.6	- 0.5	- 1.3	- 1.3	+ 0.1	- 0.5
B. Self-employed and family workers												
Persons	1,000	3,580	3,642	3,689	3,788	3,832	3,839	3,914	3,974	3,939	4,001	4,081
Working time	hrs	2,201.8	2,178.5	2,179.2	2,164.4	2,164.8	2,175.3	2,185.6	2,172.1	2,191.0	2,182.6	2,148.9
Changes against prev. year	%		- 1.1	+ 0.0	- 0.7	+ 0.0	+ 0.5	+ 0.5	- 0.6	+ 0.9	- 0.4	- 1.5

BEST COPY AVAILABLE

C. Gainfully employed persons												
Persons	1,000	38,454	37,878	37,365	37,304	37,382	37,270	37,208	37,616	38,077	38,752	38,917
Working time	hrs	1,540.9	1,557.0	1,536.9	1,535.7	1,520.4	1,502.4	1,495.8	1,489.0	1,479.2	1,463.3	1,451.0
Changes against prev. year	%		+ 1.0	- 1.3	- 0.1	- 1.0	- 1.2	- 0.4	- 0.5	- 0.7	- 1.1	- 0.8
Volume of work	mn hrs	59,254	58,976	57,426	57,288	56,836	55,994	55,656	56,010	56,323	56,706	56,469
Changes against prev. year	%		- 0.5	- 2.6	- 0.2	- 0.8	- 1.5	- 0.6	+ 0.6	+ 0.6	+ 0.7	- 0.4

1) Wage and salary earners excl. Marginal part-time workers, apprentices, people on parental leave and in partial retirement (release period) – 2) All wage and salary earners

Source: IAB calculations

23

8. References:

Authors' Collective (1998): Weniger Überstunden für mehr Beschäftigung. In: Der Arbeitsmarkt in der Bundesrepublik Deutschland 1997 und 1998, MittAB 1.

Authors' Collective (2002): Der Arbeitsmarkt in den Jahren 2001 und 2002 mit Ausblick auf 2003, MittAB 1.

Bach, Hans-Uwe (2001): Arbeitszeit und Arbeitsvolumen – Part I: Arbeitszeit steigt wieder dank mehr Beschäftigung. IABkurzbericht 3.

Bundesmann-Jansen, Jörg/Gross, Hermann/Munz, Eva (2000): Arbeitszeit '99 – Ergebnisse einer repräsentativen Beschäftigtenbefragung zu traditionellen und neuen Arbeitszeitformen in der Bundesrepublik Deutschland. Köln.

Karr, Werner/Spitznagel, Eugen (ed.) (1999): Methodische Probleme der Schätzung des gesamtwirtschaftlichen Überstundenvolumens, IAB-Werkstattbericht No.15.

Koch, Susanne (2001): Arbeitszeit und Arbeitsvolumen – Part II: Arbeitszeitkonten stabilisieren die Beschäftigung. IABkurzbericht 4.

Reyher, Lutz/Kohler, Hans (1988): Arbeitszeit und Arbeitsvolumen, in: Konzepte der Arbeitsmarkt- und Berufsforschung (3rd ed.), BeitrAB 70, pp. 245-259

The papers published in this series:

1 **Ulrich Walwei, Heinz Werner**: Employment and Social Dimensions of the Single European Market (1993)

2 **D. Bogai, F. Buttler, K. Emmerich, W. Klauder, M. Koller, G. Kühlewind, U. Möller**: Promoting Employment Instead of Financing Unemployment - Advocating an Investive Employment and Labour Policy in the New German States (1993)

3 **Gerhard Kühlewind**: Long-term Labour Market Projections - Methods and Results for the Federal Republic of Germany - (1993)

4 **Manfred Tessaring**: Manpower Requirements by Levels of Qualification in West Germany until 2010; Implications of the 1989 IAB/Prognos Projection for the Qualification Structure of Jobs (1993)

5 **Ulrich Walwei**: Monopoly or Coexistence: An International Comparison of Job Placement (1993)

6 **Heinz Werner**: The Integration of Foreign Workers into the Labour Market, (France, Germany, Netherlands, Sweden) (1994)

7 **Friedrich Buttler/Ulrich Walwei**: The Employment Contract: Cooperation Requires Stability (1994)

8 **Friedrich Buttler/Manfred Tessaring**: Human Capital as a Location Factor: Arguments for the Education Policy Discussion from a Labour Market Policy Standpoint (1994)

9 **Barbara Koller**: Social and Occupational Integration of Immigrants of German Origin in Germany (1994)

10 **Gerhard Kühlewind**: Gainful Employment and the Inter-generational Contract (1995)

11 **Johann Fuchs**: Long-term Labour Force Projections for Germany - the Concept of Potential Labour Force - (1995)

12 **Heinz Werner**: Economic Integration and Migration; the European Case (1995)

13 **Alfons Barth**: IAB Long-term Labour Market Projections and Policy Simulation with the SYSIFO Macroeconometric Model - Concept and Application (1995)

14 **Thomas Rhein**: The European Monetary Union: Possible Consequences for Employment and Earnings (1995)

15 **Lutz Bellmann/Susanne Kohaut**: Determinants of Wages in the German Service and Manufacturing Sectors: An Empirical Analysis Based on the IAB Establishment Panel (1995)

16 **Ulrich Walwei/Heinz Werner**: More Part-time Work as a Cure for Unemployment? Results of an International Comparison (1996)

The papers published in this series (continued):

17 **Ulrich Walwei**: Placement as a Public Responsibility and as a Private Service An International Comparative Perspective of the Reorganization of Placement Systems (1996)

18 **Heinz Werner**: Temporary Migration of Foreign Workers - Illustrated with Special Regard to East-West Migrations (1996)

19 **Lutz Bellmann**: Wage Differentiation and Long-term Unemployment - An International Comparison (1996)

20 **Lutz Bellmann**: The IAB Establishment Panel with an Exemplary Analysis of Employment Expectations (1997)

21 **Werner Karr**: Conceptual Problems in the Understatement of Long-term Unemployment (1997)

22 **Ulrich Walwei**: Flexibility of Employment Relationships: Possibilities and Limits (1997)

23 **Elmar Hönekopp**: Labour Migration to Germany from Central and Eastern Europe - Old and New Trends (1997)

24 **Lutz Bellmann, Herbert Düll, Jürgen Kühl, Manfred Lahner, Udo Lehmann**: Patterns of Enterprise Flexibility: IAB Establishment Panel Results, Western Germany, 1993-95 (1997)

25 **Heinz Werner**: Labour Market Trends in the United States - Lessons We Can Learn (1998)

26 **Udo Brixy, Susanne Kohaut**: Employment Growth Determinants in New Firms in Eastern Germany - Based on a Combination of IAB Establishment Database and IAB Establishment Panel (1998)

27 **Petra Beckmann**: Working Hours and Wishes Concerning Working Hours Among Women in Western and Eastern Germany - Results of an Empirical Study from 1995 (1998)

28 **Gerhard Engelbrech**: Total (E)quality Management: Paradigmatic Shift in Personnel Management (1998)

29 **Hans-Uwe Bach et al.**: Labour Market Trends and Active Labour Market Policy in the Eastern German Transformation Process 1990-1997 (1998)

30 **Frank Wießner**: The Bridging Allowance as an Instrument of Labour Market Policy - a Provisional Appraisal (1998)

31 **Ulrich Walwei**: Job Placement in Germany: Developments Before and After Deregulation (1998)

The papers published in this series (continued):

32 **Melanie Kiehl, Heinz Werner**: The Labour Market Situation of EU and of Third Country Nationals in the European Union (1999)

33 **Heinz Werner**: Countries With Successful Employment Policy - What Is Behind Their Success? (1999)

34 **Edeltraut Hoffmann/Ulrich Walwei**: The Change in Employment Forms - Empirical Results and First Explanatory Approaches (1999)

35 **Alexandros Tassinopoulos/Heinz Werner**: To Move or Not to Move? - Migration of Labour in the European Union (1999)

36 **Christian Brinkmann**: Controlling and Evaluation of Employment Promotion and the Employment Services in Germany (1999)

37 **Lutz Bellmann/Martin Brussig**: Productivity Differences Between Western and Eastern German Establishments (1999)

38 **Angela Rauch/Alexander Reinberg**: Qualification and Employment Opportunities (2000)

39 **Johann Fuchs/Detlef Schmidt**: The Hidden Labour Force in the United Kingdom. A Contribution to the Qualification of Underemployment in International Comparisons (2000)

40 **Elmar Hönekopp/Heinz Werner**: Eastward Enlargement of the European Union: a Wave of Immigration? (2000)

41 **Gerhard Engelbrech/Maria Jungkunst**: Future of Labour – Future of Women? Employment Opportunities of Women in Western Germany According to Activities and Qualification Levels Until 2010 (2000)

42 **Uwe Blien/Nicole Litzel/Joachim Möller**: The Development of European Labour Markets – The Scientific Contributions Presented at the Conference of the European Association of Labour Economists (EALE) in Regensburg (2000)

43 **Heinz Werner**: From Guests to Permanent Stayers? – From the German "Guestworker" Programmes of the Sixties to the Current "Green Card" Initiative for IT Specialists (2001)

44 **Ulrich Walwei/Heinz Werner/Ingeborg König**: Lessons We Can Learn From Other Countries (2001)

45 **Hans-Eberhard Plath**: Work Requirements in Transformation, Competence for the Future. A Critical Look at the Consequences of Current Positions (2001)

46 **Regina Konle-Seidl/Ulrich Walwei**: Job Placement Regimes in Europe: Trends and Impacts of Changes (2001)

47 **Arnd Kölling**: He Who Seeks Shall Find ... Or Perhaps Not? - Analysis of firms' searches for qualified personnel, using data from the IAB establishment panel 2000 (2002)

The papers published in this series (continued):

48 **Ulrich Walwei**: Labour Market Effects of Employment Protection (2002)

49 **Uwe Blien, Ulrich Walwei, Heinz Werner**: Labour Market Policy in Germany (2002)

50 **Petra Müller, Beate Kurtz**: Active Labour Market Policy and Gender Mainstreaming in Germany (2002)

51 **Emil Magvas, Eugen Spitznagel**: The Aggregate National Supply of Job Openings and Firms' Procedures for Filling Positions (2002)

52 **Heinz Werner**: The Integration of Immigrants into the Labour Markets of the EU (2003)

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").